

Rashes

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At least 30% of outpatient visits to family physicians involve a dermatologic issue. It is helpful to organize skin conditions in terms of their appearance and cause. The appearance of skin changes can be organized based on the primary skin lesions present (e.g., macule, patch, papule) and secondary skin lesion characteristics (scales, crusts, lichenification). The distribution pattern of skin rashes can often help in narrowing the differential diagnosis. Broad categories for causes of skin conditions include infections, immunologic causes, dermatitis conditions, and cancers. We have attempted to include the most recent treatment recommendations in the Comments and Treatment Considerations sections.

ACNE

Acne is one of the most common skin conditions seen by family physicians. Acne vulgaris and rosacea are its two main subgroups. Acne vulgaris affects more than 20 million Americans including more than 85% of adolescents. Rosacea affects mainly middle-aged and older adults.



ACNE VULGARIS

Symptoms

- Pain, pressure-like feeling, pruritus +++++

Signs

- Acne affects those areas with the most number of sebaceous glands which includes the face, neck, chest, upper arms, and upper back. +++++
- With mild acne, patients have occasional small inflamed papules or pustules. The papules are called comedones and may appear as whiteheads (closed comedones) or blackheads (open comedones).
- As the acne progresses, the comedones and pustules become more prominent and scarring can develop (Fig. 35-1).
- With more severe acne, numerous large cysts can develop along with surrounding erythema and ultimately significant scarring (Fig. 35-2).



FIGURE 35-1 Chin acne. (From Schwarzenberger K, Werchaniak AE, Ko C: *Requisites in dermatology*, Philadelphia, 2009, Saunders.)



FIGURE 35-2 Nodulocystic acne. (From Schwarzenberger K, Werchaniak AE, Ko C: *Requisites in dermatology*, Philadelphia, 2009, Saunders.)

Workup

- Acne vulgaris is diagnosed clinically, but a complete history is important especially in the nonadolescent patient or a patient with rapidly progressive acne. These situations may indicate a systemic cause such as PCOS or an adrenal tumor. +
- Other PCOS signs may include menstrual irregularities (most commonly oligomenorrhea), hirsutism, ovarian cysts, and acanthosis nigricans. +++
- Signs of elevated androgen levels other than progressive acne include deepening voice, decreased breast size, alopecia, oligomenorrhea, and hirsutism. ++++
- An evaluation for these conditions may include a pelvic ultrasound, hormone levels, and possibly an endocrinology consult.

Comments and Treatment Considerations

There are no definitive guidelines for acne treatment, but it should be based on the type of lesion present. It is important to note that it takes 8 weeks for microcomedones to mature, so any treatment adjustment must be continued for at least that long to see an effect.

For comedonal or mild inflammatory acne, topical preparations are best. These include the topical retinoids tretinoin (Retin A), adapalene (Differin), and tazarotene (Tazorac). Results of multiple studies do not definitively argue for one of these retinoid creams over the others. It is best to start with lower doses of the creams to minimize skin sensitivity and to apply at night to lessen photosensitivity. Other topical agents that can be used include benzoyl peroxide and topical antibiotics.

For moderate to severe inflammatory acne oral antibiotic treatment should be considered. These include tetracycline, doxycycline, and minocycline among others. It is generally recommended for oral antibiotic treatment to begin with higher doses and then to decrease the dose over time.

Oral isotretinoin (Accutane) can be considered for severe acne that has not responded to other treatments. Due to significant potential adverse effects, the FDA has placed restrictions on prescribing Accutane.

CONTACT DERMATITIS



ALLERGIC CONTACT DERMATITIS

Allergic contact dermatitis is an acquired inflammatory reaction of the skin. It represents a delayed hypersensitivity reaction. Common causes include poison ivy, poison oak, nickel, hair dyes, soaps, detergents, and cleaning agents.

Symptoms

- Pruritus ++++

Signs

- Papules, vesicles, bullae with surrounding erythema, localized to the site of the allergen contact +++++
 - Crusting and oozing may be present (Fig. 35-3). ++
 - Scaling +++
 - Thickening and lichenification +++

Workup

- Clinical diagnosis—Configuration and location often are clues to the allergen. +++++
 - Patch testing—If unclear

Comments and Treatment Considerations

- Identify and avoid allergens.
- Corticosteroids



FIGURE 35-3 A, Allergic contact dermatitis to neoprene in keyboard pad. B, Allergic contact dermatitis to paraphenylenediamine. C, Allergic contact dermatitis. D, Bleached rubber dermatitis.

- Topical—Caution in using high potency especially on the face and skinfolds
- Oral—When dermatitis involves greater than 10% of skin surface
- Antihistamines: oral and topical
- Aveeno bath
- Wet dressings soaked in Burow's solution help relieve itching, reduce redness, and debride crusts.



IRRITANT CONTACT DERMATITIS

Irritant contact dermatitis results from exposure to substances that cause physical, mechanical, or chemical irritation of the skin. Common causes include frequent soaping of skin, lip licking, and thumb sucking.

Symptoms

- Pruritus ++++

Signs

- Skin is dry, cracked, and chapped with macular erythema (Fig. 35-4). +++++



FIGURE 35-4 Irritant dermatitis. (From Schwarzenberger K, Werchniak AE, Ko C: *Requisites in dermatology*, Philadelphia, 2009, Saunders.)

Workup

- Clinical diagnosis

Comments and Treatment Considerations

Identify and avoid the irritant. Recommend applying moisturizers at least twice per day and avoiding excessive washing.

ROSACEA**Symptoms**

- Burning and stinging of skin with facial flushing and can have pain or pressure with cystic lesions ++++

Signs

- Variable presentation depending on subtype present, but most patients initially have facial erythema and telangiectasias ++++
- Patients may have recurrent episodes of flushing especially on the face in response to exercise or embarrassment.
- A large subgroup has the papulopustular type with small papules and very small pustules with a red central portion of the face (Fig. 35-5). ++++
- A smaller subgroup has the phymatous subtype that has skin thickening and nodularities especially on the nose. ++

Workup

- Clinical diagnosis

Comments and Treatment Considerations

Treatment of mild rosacea can include topical antibiotics (metronidazole) and benzoyl peroxide. When symptoms worsen tretinoin (Retin A) and/or oral antibiotics (tetracycline, erythromycin, minocycline) can be used.



FIGURE 35-5 Papulopustular rosacea. (From Schwarzenberger K, Werchniak AE, Ko C: Requisites in dermatology, Philadelphia, 2009, Saunders.)

It is important to note that rosacea is a chronic condition with no curative treatment that has periods or exacerbations and remissions.

CHILDHOOD EXANTHEMS

Although the significant majority of children with exanthems have benign, self-limiting illnesses, more serious conditions can present with similar signs and symptoms. The appearance, distribution, and progression of the rash are very helpful in making an accurate diagnosis. Also, an awareness of associated symptoms including cough, conjunctivitis, arthralgias, and fever and their temporal association with the rash can assist in making the diagnosis. A history of exposure to infectious illnesses and the age of the patient may help narrow the differential.



CHICKENPOX

Symptoms

- No prodrome in young children; low-grade fever, malaise with rash onset +++++
- Older children and adults—Fever, chills, headache, cough may precede rash by 2 to 3 days +++
- Rash very pruritic ++++
- Rarely CNS complications (i.e., transverse myelitis) 11 to 20 days after rash +

Signs

- Unique feature—Exanthem has lesions in different stages at same time +++++
- Rash begins on face or scalp, then spreads to trunk, relatively sparing extremities +++++
- Rapid progression of lesions 2 to 3 mm in size from rose colored macules, to papules, to vesicles, to pustules, to crusts (Fig. 35-6) +++++
- Early vesicle surrounded by irregular area of erythema (“dew drop on a rose pedal”) ++++
- New lesions appear in crops or clusters. ++++
- Crusts fall off in 1 to 3 weeks. Healing lesions may hypopigment for weeks to months. ++++

Workup

- Clinical diagnosis is available by testing with direct fluorescence assay (DFA) or PCR testing. ++++
- A fourfold increase in varicella IgG level is also confirmatory.

Comments and Treatment Considerations

Treatment—Acyclovir is effective for primary varicella infections in both healthy and immunocompromised patients. Acyclovir

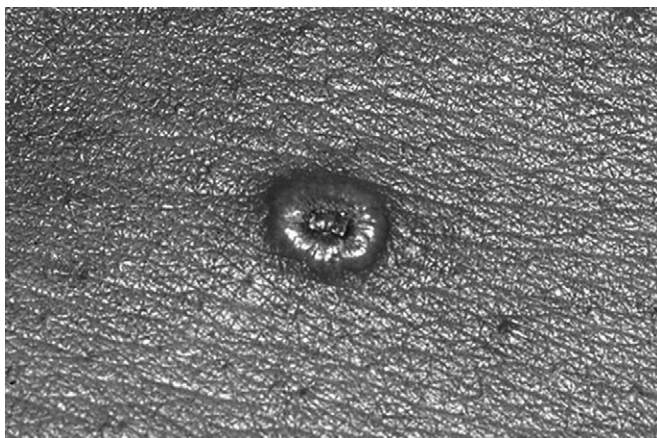


FIGURE 35-6 Varicella (chickenpox). (From Schwarzenberger K, et al: *Requisites in dermatology*, Philadelphia, 2009, Saunders.)

is not currently approved for children less than 2 years of age. Valacyclovir safety has not been assessed in prepubertal children. There is a significantly decreased incidence with widespread use of vaccine.



ERYTHEMA INFECTIOSUM

Symptoms

- Healthy appearing with nonspecific signs of headache, coryza, low-grade fever for 2 days prior to rash onset ++++
- 10% have arthralgias; large joints more commonly affected ++

Signs

- Rash begins with confluent, erythematous edematous plaques on cheeks (“slapped cheeks”) that fades in 1 to 4 days +++++
- Rash spreads rapidly to trunk and extensor surfaces of proximal extremities but spares the palms and soles +++++
- Rash can be morbilliform, confluent, or annular with central clearing of lesions causing a lacy reticulated appearance ++++
- The rash can wax and wane for 1 to 3 weeks. ++

Workup

- Clinical diagnosis

Comments and Treatment Considerations

The treatment is symptomatic. There can be a transient aplastic crisis in patients with hemolytic anemias (SS disease).



HAND-FOOT-MOUTH DISEASE

Symptoms

- Brief prodrome of 12 to 24 hours of low-grade fever, malaise, and abdominal pain ++++
- Oral lesions usually painful and can interfere with eating +++
- Skin lesions may be asymptomatic, tender, or painful.

Signs

- Oral lesions begin as macules (2 to 8 mm), then progress to gray thin-walled rounded vesicles surrounded by erythema, then erythematous erosions. Lesions resolve in 5 to 10 days. +++++
- Cutaneous lesions appear together with or shortly after oral lesions. ++++
- Each skin lesion begins as an erythematous macule or papule 2 to 10 mm and then develops into gray round/oval vesicle (Fig. 35-7). ++++
- Dorsal surfaces of hand and sides of fingers are more affected than feet. ++++
- Its peripheral distribution is unique for childhood exanthems.

Workup

- Clinical diagnosis

Comments and Treatment Considerations

Treatment is symptomatic. The cause is by enteroviruses, most commonly coxsackievirus A16.



FIGURE 35-7 Hand, foot, and mouth disease.



KAWASAKI'S DISEASE

Symptoms

- Irritable and feverish in acute febrile stage ++++
- Anorexia, urethritis, arthritis/arthralgia, abdominal pain, or vomiting may occur. +++

Signs

- Must have fever of 5 or more days' duration without other explainable cause +++++
- And must have at least four of the five following signs:
 - Bilateral nonexudative conjunctivitis +++++
 - Oropharynx change (injected fissured lips, pharyngitis, strawberry tongue) +++++
 - Extremity changes (erythema or edema palms/soles, or periungual desquamation) (Fig. 35-8) +++++
 - Polymorphous exanthema can be quite variable but is not vesicular. +++++
 - Acute, nonsuppurative cervical lymphadenopathy +++

Workup

- No specific laboratory tests exist but can have elevation of ESR, CRP, or platelets +++
- Echocardiogram is important to evaluate for coronary artery aneurysms.



FIGURE 35-8 Kawasaki's disease. (From White G: Color atlas of dermatology, 3rd ed, Philadelphia, 2004, Mosby.)

Comments and Treatment Considerations

Treatment is IVIg and high-dose aspirin (80 to 100 mg/kg/day orally divided four times daily) to reduce cardiac complications.



MEASLES

Symptoms

- High fever (104° F), cough, coryza, conjunctivitis that precedes rash and lasts 3 to 4 days +++++

Signs

- Oral lesions—Koplik's spots are small, irregular, bright red spots that appear within 24 to 48 hours of symptoms and precede rash by about 1 day. ++++
- Rash—Erythematous, discrete maculopapular lesion that starts behind ears and forehead, spreads down over neck and trunk (Fig. 35-9), then spreads distally to arms and legs including hands and feet. Rash worse on third day. +++++
- Face/trunk—Rash confluent; arms/legs; lesions discrete +++++

Workup

- Clinical diagnosis +++++
- Can obtain measles IgM titer or check for rise in measles IgG



FIGURE 35-9 Measles. (From White G: Color atlas of dermatology, 3rd ed, Philadelphia, 2004, Mosby.)

Comments and Treatment Considerations

Symptomatic Treatment

The incidence has significantly decreased since the 1963 vaccine but outbreaks have occurred since that time. Complications are encephalitis and secondary bacterial infections—subacute sclerosing panencephalitis (SSPE)—which results in rapid motor and mental deterioration.



MENINGOCOCCEMIA

Signs

- Caused by *Neisseria meningitidis*
- Adolescent patient with an initial maculopapular rash who develops serious signs including meningitis and septic shock
- May rapidly develop extensive petechiae and purpura (purpura fulminans)



ROCKY MOUNTAIN SPOTTED FEVER

Signs

- Children who are ill appearing
- Maculopapular rash starting in the extremities
- Involves the palms and soles that becomes petechial or hemorrhagic



ROSEOLA

Symptoms

- Fever (102° to 105° F) for 3 to 5 days then rapid defervescence ++++
- Frequently mild URI symptoms but most children are very healthy appearing

Signs

- Rash onset usually correlates with fever subsiding ++++
- Rash is erythematous and macular or maculopapular lasting 1 to 2 days with 2- to 5-mm lesions that blanch under pressure, often with a surrounding whitish ring +++++
- Most prominent on neck and trunk, but proximal extremities and face may be affected +++
- Can have oral lesions: ulcers or erythematous macules ++

Workup

- Clinical diagnosis

Comments and Treatment Considerations

Roseola is caused by HSV-6 and the illness is also known as fifth disease or exanthem subitum. Treatment is supportive; the peak incidence occurs between 7 and 13 months of age and is rare beyond 4 years of age.



RUBELLA

Symptoms

- Young children—Minimal if any constitutional symptoms ++++
- Older children—Low-grade fever, headache, cough for 1 to 4 days prior to rash +++
- Rash often pruritic ++++

Signs

- Lymphadenopathy precedes rash and is significant especially in posterior cervical region.++++
- Rash—Pink-red discrete macules and papules that appear on trunk and coalesce and give it a uniform red blush; rapid disappearance of rash is in contrast to measles ++++

Workup

- Clinical diagnosis with rubella IgM or IgG titer rise being confirmatory ++++

Comments and Treatment Considerations

The treatment is symptomatic. If the patient is pregnant, a perinatology evaluation and high level ultrasound is indicated. 50% of infants with acquired rubella in the first trimester show signs of fetal damage, and the earlier the exposure the more severe the damage.



SCARLET FEVER

Symptoms

- Onset of sore throat and fever precedes rash. ++++

Signs

- Rash appears 12 to 48 hours after onset of pharyngitis symptoms. ++++
- Rash is a diffuse finely papular, erythematous eruption producing bright red discoloration that feels rough (“sandpaper rash”). ++++
- Rash is more intense along creases of elbows, axillae, and groin (Pastia's lines). ++
- Rash fades in 3 to 4 days then desquamates, first on face then downward (“sunburn”). +++
- Oropharynx examination consistent with strep throat and often has “strawberry tongue” +++

Workup

- Clinical diagnosis but can do strep culture for confirmation ++++
- Rapid strep test has poor sensitivity (around 85%)

Comments and Treatment Considerations

This condition is highly sensitive to penicillin and thus it is the first-line medication. It is also sensitive to azithromycin and other macrolides. There is generally no need for antibiotics with broader coverage such as Augmentin or cephalosporins. The differential diagnosis includes Kawasaki's disease, drug eruptions, rubella, and measles.

**TOXIC SHOCK SYNDROME****Signs**

- Abrupt onset of high fever
- Ill-appearing patient with a diffuse erythematous rash that is sunburn-like

**WINTER EXANTHEMS****Symptoms**

- Nasal congestion, cough usually preceding rash ++++
- Rash—Usually asymptomatic ++++

Signs

- Rash usually mildly erythematous and maculopapular, and of short duration ++++
- Variable presentations due to many different viruses causing winter exanthems

Workup

- Clinical diagnosis

Comments and Treatment Considerations

The treatment is symptomatic. 5% to 10% of these infections are caused by parainfluenza viruses, RSV, and influenza A and B. These are frequently confused with drug rashes, particularly amoxicillin.

**ZOSTER****Symptoms**

- Pain and paresthesias precede rash in affected dermatome ++++
- Pain quality and severity varies. May simulate appendicitis, pleurisy, etc. +++++

Signs

- Dermatomal distribution of rash is distinctive, usually unilateral and involving only one dermatome ++++
- T3-L2 most common dermatomes affected
- 10% of zoster involves ophthalmic division of trigeminal nerve. Of these 30% have involvement of tip of nose (nasociliary branch) and can have potential complications in the eye (keratosis, scleritis). ++

Workup

- This is a clinical diagnosis but can do testing as described in chickenpox workup section. +++++

Comments and Treatment Considerations

Start antivirals if less than 72 hours since rash first appeared. If more than 72 hours and new lesions appear consider starting treatment. See chickenpox section for comments on acyclovir and valacyclovir. Simultaneous prednisone treatment may be considered if initial symptoms are severe. Steroids speed lesion healing, decrease pain, but do not affect postherpetic neuralgia. Prednisone dose is 1 to 2 mg/kg/day PO with 7- to 10-day taper.

DIAPER DERMATITIS

Diaper rash is a general term for various inflammatory conditions in the diaper area, but its common starting point is wet skin under a diaper. Prevention involves frequent diaper changes, leaving the diaper off as much as possible, and gentle skin care. Breastfed babies have a lower incidence of diaper rash.

Signs

- The irritative pattern (“the hills”), a mild red peeling rash on the convex surfaces that touch the diaper, sparing the inguinal folds ++
- The skinfold pattern (“the valleys”), moist macerated symmetric rashes in skinfolds and creases. This is often due to *Candida* and may follow oral antibiotic use. +++

Workup

- A thorough history of the rash
- Generally, tests are not indicated.

Comments and Treatment Considerations

To treat the irritative rash, stop using harsh soaps, detergents, or products with fragrances or alcohol; recommend mild fatty soap or non-soap cleansers for bathing. Use only water-based alcohol and fragrance-free diaper wipes. Use a barrier cream or ointment (NOTE: these may worsen candida). Use disposable diapers with absorbent gel material that wicks away moisture; vapor-permeable coverings

have also been shown to be helpful. If using cloth diapers, wash at high temperature using fragrance-free and enzyme-free detergents. Do not use plastic pants.

If rash has been present for more than 72 hours, the presence of *Candida* is likely. If rash is moderate to severe, consider using hydrocortisone 1% for the first day or two of treatment. Do not use longer than 2 weeks. If rash does not respond, alternative diagnoses in the same distribution are:

- Atopic dermatitis (uncommon in infants younger than 6 months)
- Bacterial superinfection: impetiginous pattern with thin-walled blisters
- Zinc deficiency, either inherited (acrodermatitis enteropathica) or acquired
- Kawasaki's disease
- Wiskott-Aldrich syndrome: X-linked, with severe eczema and petechiae

To treat the skinfold rash (or rash lasting more than 72 hours), in addition to treatments for the irritative rash, use topical antifungals. Creams or ointments have better penetration and effectiveness than powders. Simultaneous use of hydrocortisone 1% hastens healing. No greater strength should be used because of local and systemic side effects. Steroid-antifungal mixes contain stronger steroids than are safe. If rash does not respond, alternative diagnoses in the distribution as the skinfold pattern rash are:

- Seborrheic dermatitis—Salmon-colored, greasy lesions with yellowish scale in skinfolds; look for similar rash on scalp, face, neck, behind ears
- Psoriasiform dermatitis—Beefy red, confluent, silvery scales, involving the entire diaper area but with skinfold areas more prominent
- Letterer-Siwe disease (histiocytosis)—More papular and more likely to be ulcerated than *Candida*. Look for constitutional symptoms and abnormal examination findings such as hepatosplenomegaly.
- HIV or DM may rarely present as severe persistent or recurrent *Candida* infections resulting from immunosuppression.

DRUG RASHES

Drug rashes manifest through two mechanisms: immunologic and nonimmunologic. Immunologic mechanisms present as one of the following four types: type I, IgE-dependent reactions; type II, cytotoxic reactions; type III, immune complex reactions; and type IV, delayed-type reactions. Nonimmunologic drug rashes present as an accumulated, direct release of mast cell mediators, overdose, and/or phototoxicity.

Signs

- Most reactions occur within 1 to 2 weeks.

Workup

- Skin examination
- Medication list including dose, route, frequency, and when started
- Recent changes in medications
- Relation to when medications started or stopped
- Biopsy if needed

Comments and Treatment Considerations

Epidemiology for drug rashes includes a higher female-to-male ratio and higher risk for older adult patients.

Treatment should include any of the following as necessary: stop affecting agent; administer antihistamines (i.e., Benadryl, Claritin, Atarax); supportive treatment; steroids: topical (symptomatic relief) or systemic (if severe); epinephrine and hospitalization for severe cases; immunoglobulins if appropriate.

Symptoms

- Inflammatory papules
- Pustular lesions

Common Drug Associations

- Amoxapine
- Corticosteroids
- Halogens
- Haloperidol
- Hormones
- Isoniazid
- Lithium
- Phenobarbital
- Phenytoin
- Trazodone

**ALOPECIA****Symptoms**

- Hair loss

Common Drug Associations

- ACE inhibitors
- Allopurinol
- Anticoagulants
- Azathioprine
- Bromocriptine
- Beta-blockers
- Cyclophosphamide
- Didanosine
- Hormones
- Indinavir
- NSAIDs

- Phenytoin
- Methotrexate (MTX)
- Retinoids
- Valproate



ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS

Symptoms

- Small, sterile, nonfollicular pustules
- Generalized scarlatiniform erythema
- Fever



BULLAE

Symptoms

- Bullous, blister-like lesions

Common Drug Associations

- Ampicillin
- D-penicillamine
- Captopril
- Chloroquine
- Ciprofloxacin
- Enalapril
- Furosemide
- Neuroleptics
- Penicillins
- Phenacetin
- Psoralen plus UVA
- Salicylazosulfapyridine
- Sulfasalazine
- Terbinafine



DERMATOMYOSITIS-LIKE RASHES

Symptoms

- Violet-colored or dusky red rash
- Usually in areas of the skin that are sensitive to the sun

Common Drug Associations

- BCG vaccine
- Hydroxyurea ++++
- Lovastatin
- Penicillamine
- Simvastatin
- Tegafur

ERYTHEMA MULTIFORME



ERYTHEMA MULTIFORME MINOR

Symptoms

- Target lesions distributed on the extremities
- Mucous membranes

Comments and Treatment Considerations

Most cases are due to infection with herpes simplex virus, and treatment and prophylaxis with acyclovir is helpful.



STEVENS-JOHNSON SYNDROME

Symptoms

- Widespread skin involvement
- Large and atypical targetoid lesions
- Significant mucous membrane involvement
- Constitutional symptoms are present
- Sloughing of the skin may develop

Common Drug Associations

- Allopurinol
- Anticonvulsants
- Aspirin/NSAIDs
- Barbiturates
- Carbamazepine
- Cimetidine
- Ciprofloxacin
- Codeine
- Didanosine
- Diltiazem
- Erythromycin
- Furosemide
- Griseofulvin
- Hydantoin
- Indinavir
- Nitrogen mustard
- Penicillin
- Phenothiazine
- Phenylbutazone
- Phenytoin
- Ramipril
- Rifampicin
- Saquinavir
- Sulfonamides
- Tetracyclines
- TMP-SMX



TOXIC EPIDERMAL NECROLYSIS

Symptoms

- Severe skin reaction +++
- Prodrome of painful skin quickly followed by rapid, widespread, full-thickness skin sloughing
- Affects 30% or more of the total body surface area
- Secondary infection is a major concern.

Common Drug Associations

- Allopurinol
- Anticonvulsants
- Aspirin/NSAIDs
- Sulfadoxine and pyrimethamine (Fansidar)
- Isoniazid
- Penicillins
- Phenytoin
- Prazosin
- Sulfonamides
- Tetracyclines
- Thalidomide
- TMP-SMX
- Vancomycin



ERYTHEMA NODOSUM

Symptoms

- Reactive red nodules
- Usually appear on the anterior part of the lower legs

Common Drug Associations

- Echinacea
- Halogens
- Oral contraceptives ++++
- Penicillin
- Sulfonamides
- Tetracycline



ERYTHRODERMA

Symptoms

- Inflammation of a large portion of the body's skin

Common Drug Associations

- Allopurinol
- Anticonvulsants

- Barbiturates
- Captopril
- Carbamazepine
- Cefoxitin
- Chloroquine
- Chlorpromazine
- Cimetidine
- Diltiazem
- Griseofulvin
- Lithium
- Nitrofurantoin
- Omeprazole
- Phenytoin
- St John's wort
- Sulfonamides
- Thalidomide



FIXED DRUG ERUPTIONS

Symptoms

- Skin lesions that occur in the same area every time the offending drug is taken
- Circular
- Violaceous
- Edematous plaques that resolve and cause some macular hyperpigmentation
- Sites commonly affected are the hands, feet, and genitalia

Common Drug Associations

- Acetaminophen
- Ampicillin
- Anticonvulsants
- Aspirin/NSAIDs
- Barbiturates
- Benzodiazepines
- Butalbital
- Cetirizine
- Ciprofloxacin
- Clarithromycin
- Dapsone
- Dextromethorphan
- Doxycycline
- Fluconazole
- Hydroxyzine
- Lamotrigine
- Loratadine
- Metronidazole
- Oral contraceptives
- Penicillins
- Phenacetin
- Phenolphthalein

- Phenytoin
- Piroxicam
- Saquinavir
- Sulfonamides
- Tetracyclines
- Ticlopidine
- Tolmetin
- Vancomycin
- Zolmitriptan



HYPERSENSITIVITY SYNDROME

Symptoms

- Fever
- Sore throat
- Skin rash
- Lymphadenopathy
- Hepatitis
- Nephritis
- Leukocytosis with eosinophilia
- Potentially a life-threatening reaction

Common Drug Associations

- Allopurinol
- Amitriptyline
- Carbamazepine
- Dapsone
- Lamotrigine
- Minocycline
- NSAIDs
- Olanzapine
- Oxcarbazepine
- Phenobarbital
- Phenytoin
- Saquinavir
- Spironolactone
- Sulfonamides
- Zalcitabine
- Zidovudine



LICHENOID RASHES

Symptoms

- Extremely pruritic reaction that looks similar to lichen planus

Common Drug Associations

- Amlodipine
- Antimalarials
- Beta-blockers

- Captopril
- Diflunisal
- Diltiazem
- Enalapril
- Furosemide
- Glimepiride
- Gold
- Leflunomide
- Levamisole
- L-thyroxine
- Penicillamine
- Phenothiazine
- PPIs
- Rofecoxib
- Salsalate
- Sildenafil
- Tetracycline
- Thiazides
- Ursodeoxycholic acid



LUPUS

Symptoms

- Annular psoriasiform
- Nonscarring lesions in a photodistributed pattern

Common Drug Associations

- Drug-induced systemic lupus erythematosus (SLE)
 - Hydralazine
 - Procainamide
 - Minocycline
 - Beta-blockers
 - Chlorpromazine
 - Cimetidine
 - Clonidine
 - Estrogens
 - Isoniazid
 - Lithium
 - Lovastatin
 - Methyldopa
 - Oral contraceptives
 - Quinidine
 - Sulfonamides
 - Tetracyclines
 - TNF- α inhibitors
- Drug-induced subacute cutaneous lupus erythematosus
 - Hydrochlorothiazide
 - Calcium channel blockers
 - Cimetidine

- Griseofulvin
- Leflunomide
- Terbinafine
- TNF- α inhibitors



MORBILIFORM RASHES

Symptoms

- Rash is symmetric
- Confluent erythematous macules
- Papules that spare the palms and soles
- Also known as an exanthematous eruption

Common Drug Associations

- ACE inhibitors
- Allopurinol
- Amoxicillin
- Ampicillin
- Anticonvulsants
- Barbiturates
- Carbamazepine
- Cetirizine
- Ginkgo biloba
- Hydroxyzine
- Isoniazid
- Nelfinavir
- NSAIDs
- Phenothiazine
- Phenytoin
- Quinolones
- Sulfonamides
- Thalidomide
- Thiazides
- TMP-SMX
- Zalcitabine



PEMPHIGOUS RASHES

Symptoms

- Rash involving pruritic blisters

Common Drug Associations

- Thiols
 - Captopril
 - D-penicillamine
 - Gold sodium thiomalate

- Mercaptopropionyl glycine
- Pyritinol
- Thiamazole
- Thiopronine
- Nonthiols
 - Aminophenazone
 - Aminopyrine
 - Azapropazone
 - Cephalosporins
 - Heroin
 - Hydantoin
 - Imiquimod
 - Indapamide
 - Levodopa
 - Lysine acetylsalicylate
 - Montelukast
 - Oxyphenbutazone
 - Penicillins
 - Phenobarbital
 - Phenylbutazone
 - Piroxicam
 - Progesterone
 - Propranolol
 - Rifampicin



PHOTOSENSITIVITY

Symptoms

- Can manifest in many forms
- Usually a sunburn-like rash or dermatitis
- Occurs on sun-exposed portions of the body

Common Drug Associations

- ACE inhibitors
- Amiodarone
- Amlodipine
- Celecoxib
- Chlorpromazine
- Diltiazem
- Furosemide
- Griseofulvin
- Lovastatin
- Nifedipine
- Phenothiazine
- Piroxicam
- Quinolones
- Sulfonamides
- Tetracycline
- Thiazide



PSORIASIS

Symptoms

- Psoriatic rash

Common Drug Associations

- ACE inhibitors
- Angiotensin receptor antagonists
- Antimalarials
- Beta-blockers
- Bupropion
- Calcium channel blockers
- Carbamazepine
- Interferon-alpha
- Lithium
- Metformin
- NSAIDs
- Terbinafine
- Tetracyclines
- Valproate sodium



SERUM SICKNESS

Symptoms

- Cutaneous signs typically begin with erythema on the sides of fingers, hands, and toes and progress to a widespread eruption (most often morbilliform or urticarial)
- Fever
- Arthralgia
- Arthritis
- This is a type III hypersensitivity reaction.

Common Drug Associations

- Antithymocyte globulin for bone marrow failure
- Human rabies vaccine
- Vaccines containing horse serum derivatives



URTICARIAL RASHES

Symptoms

- Small wheals
- Large wheals that formed after several small wheals coalesced

Common Drug Associations

- ACE inhibitors
- Alendronate
- Aspirin/NSAIDs

- Blood products
- Cephalosporins
- Cetirizine
- Clopidogrel
- Dextran
- Didanosine
- Infliximab
- Inhaled steroids
- Nelfinavir
- Opiates
- Penicillin
- Peptide hormones
- Polymyxin
- PPIs
- Radiologic contrast material
- Ranitidine
- Tetracycline
- Vaccines
- Zidovudine



VESICULOBULLOUS

Symptoms

- Can resemble pemphigus
- Bullous pemphigoid
- Linear IgA dermatosis
- Dermatitis herpetiformis
- Herpes gestationis
- Cicatricial pemphigoid
- Mucosal involvement commonly seen with nonthiol drugs

Common Drug Associations

- ACE inhibitors
- Aspirin/NSAIDs
- Barbiturates
- Captopril
- Cephalosporins
- Entacapone
- Estrogen
- Furosemide
- Griseofulvin
- Influenza vaccine
- Penicillamine
- Penicillins
- Sertraline sulfonamides
- Thiazides

ERYTHEMA MULTIFORME

Erythema multiforme (EM) is a cutaneous hypersensitivity reaction commonly associated with herpes simplex and *Mycoplasma* infections, but many etiologies have been reported.

Symptoms

- Viral prodrome including mild fever, malaise, sore throat +++
- Herpes simplex infection +++
- Itching and burning, followed by sudden onset of symmetric lesions over extremities ++
- Painful lip and oral blisters +++
- Other mucosal involvement: eyes, anogenital tract ++

Signs

- Target lesions: raised lesions having erythematous border with central blister, petechiae, or purpura ++++
- Lesions are symmetrically distributed, involving primarily extremities and the face. ++++
- Lip and buccal mucosal ulcers +++

Workup

- No specific laboratory testing is indicated because up to 50% of cases are idiopathic. Skin biopsy may be considered if diagnosis is not clear.

Comments and Treatment Considerations

EM is a self-limited condition and resolves in 2 to 4 weeks. Therefore, treatment should be supportive and symptom directed. Withdraw precipitating agents if known. Treatment of herpes infection with acyclovir or valacyclovir does not alter the course of EM. For severe disease, a 1- to 3-week course of prednisone (40 to 80 mg/day PO) with rapid taper is recommended.

- Limited data for treatment of recurrent or persistent EM (up to one third of cases):
 - High-dose corticosteroids
 - Acyclovir 400 mg twice a day PO for HSV-associated EM
 - Dapsone 100 to 150 mg PO daily
 - Azathioprine (100 to 150 mg PO daily), thalidomide (100 mg/day), and cyclosporine have been used for severe disease not responsive to other agents.

Scarring is uncommon, but hypopigmentation or hyperpigmentation is possible.

FUNGAL INFECTIONS

Fungal infections of the skin account for more than 6 million physician visits per year. The majority of these cases are seen by nondermatologists. Most of these infections are caused by dermatophytes,

which are organisms that have acquired the ability to metabolize keratin. Accurate diagnosis is made by a combination of knowledge of the clinical presentation along with confirmatory testing. Potassium hydroxide (KOH) analysis is a confirmatory test that isolates the fungal elements under direct microscopy and is best performed when the specimen is obtained from the advancing margins of the lesion and the slide is gently heated. Various tissues can be sent for culture in Sabouraud's agar using antibiotics to suppress bacterial growth. Use of a Wood's lamp is helpful when the type of dermatophyte is *Microsporum*.



CANDIDIASIS

Symptoms

- Lesions usually pruritic but can be painful if significant skin breakdown occurs ++++

Signs

- Usually appears as erythematous macerated plaques and erosions with delicate peripheral scaling and erythematous satellite papulopustules ++++
- Typically located in areas where two skin surfaces closely oppose each other, which include the inguinal folds, axillae, scrotum, intergluteal folds, and abdominal folds (pannus) ++++

Workup

- Usually a clinical diagnosis, based on typical appearance and distribution of lesions. Can be confirmed by KOH examination, which reveals oval budding yeasts with septate hyphae and pseudohyphae (elongated, filamentous cells connected end to end) ++++

Comments and Treatment Recommendations

Effective topical treatments include nystatin, miconazole, clotrimazole, and ketoconazole creams. Use until resolution of lesions; may be used twice weekly after to prevent recurrences. Oral antifungal treatment, including fluconazole, itraconazole, and ketoconazole, can be used for extensive disease. Treatment should continue for 2 to 6 weeks.



ONYCHOMYCOSIS

Symptoms

- Usually asymptomatic ++
- Can cause pain ++++

Signs

- Distal subungual onychomycosis—Begins with white, yellowish, or brownish discoloration of distal corner of nail that gradually spreads to the entire nail. Number one toenail usually affected first. Most common type causing 90% of onychomycosis ++++
- Proximal subungual onychomycosis—Affects proximal part of nail; uncommon +
- White superficial onychomycosis—Dull white spots on surface of nail plate +
- Yeast onychomycosis—Affects almost exclusively fingernails. Cause is *Candida*. +
- Mold onychomycosis—The clinical significance of nondermatophyte molds currently unclear +

Workup

- It is important to establish presence of fungus before starting antimycotic treatment because at least 50% of cases of nail dystrophy are *not* caused by onychomycosis. Other causes include trauma, lichen planus, psoriasis, and eczema.
- KOH scraping can be done but its sensitivity is variable depending on adequacy of specimen. +++
- Fungal culture of nail clippings of full thickness performed more often but sensitivity not much better than KOH; 30% of fungal cultures may be falsely negative so it is advised that if there is strong clinical suspicions repeat culture if first culture negative ++++
- For proximal subungual-type nail plate biopsy or partial/full nail removal with culture needed for confirmation ++++
- Dermatophyte test medium (DTM) can be performed in physician's office. Results available in 3 to 7 days and sensitivity/specificity similar to Sabouraud's fungal culture. ++++

Comments and Treatment Considerations

Indications for treatment are history of cellulitis of foot with ipsilateral onychomycosis, patients with diabetes mellitus, patients with discomfort/pain in infected nails, and patients' desire for cosmetic reasons (most common reason). A discussion with the patients about whether treatment is appropriate is important because onychomycosis treatment is often not effective (about 40% successful), recurrences are common, treatment may have potentially serious side effects (liver toxicity), and even when treatment is successful, nail normalization can take over 12 months after fungus is eliminated.

Topical treatments are generally ineffective. This includes ciclopirox (Penlac) in which only 7% of patients treated have complete resolution of onychomycosis. Data currently show terbinafine has greater efficacy and fewer serious side effects than other oral medications. Onychomycosis affects 8% of the population. Risk factors include older age, diabetes mellitus, tinea pedis, psoriasis, and immunodeficiency.



TINEA BARBAE

Symptoms

- Pruritus and pain in beard area of men exclusively ++++

Signs

- Limited to coarse-hair-bearing areas of beard and mustache of men
- Inflammatory—Unilateral, lesions nodular and boggy +++
- Superficial—Resembles bacterial folliculitis with pustules ++
- Actively spreading vesiculopustular border ++

Workup

- Clinical diagnosis with KOH confirmation. Culture can be done if needed. ++++

Comments and Treatment Considerations

Griseofulvin (1 g/day orally) continued for 2 to 3 weeks after clinical resolution.



TINEA CAPITIS

Symptoms

- Asymptomatic at first ++
- If not treated can become pruritic or painful ++++

Signs

- “Black dot”—Most common type. Remnant of hair left behind in infected follicle appears as a black dot on clinical examination. ++++
- Can have various degrees of scaling, alopecia, and inflammation. The amount of alopecia and inflammation generally increases over time if not treated. +++++
- Lesions can develop rapidly into pustular folliculitis, furuncles, and kerions (intense inflammatory, boggy mass studded with broken hairs, oozing purulent material). ++

Workup

- Clinical evaluation combined with confirmatory testing, which can include KOH examination of the hair shaft (KOH scraping of the scale will *not* reveal fungus). Fungal culture can also be done for confirmation (entirely remove a few hair shafts and send to lab). ++++
- Wood's lamp is positive with *Microsporum canis* but this fungus only causes a very small percent of tinea capitis in the United States. +

Comments and Treatment Considerations

Topical treatment is futile. Griseofulvin, terbinafine, and itraconazole have currently shown equal effectiveness. When outbreaks occur it is important to identify asymptomatic carriers by cultures from hairs collected by brushing with a toothbrush and treating with selenium sulfide shampoo. It is largely a disease of childhood (4 months to 4 years). African Americans are at greater risk.



TINEA CORPORIS

Symptoms

- Usually pruritus ++++

Signs

- Diverse clinical presentation but begins as circular or oval erythematous scaling lesion that spreads centrifugally. Then central clearing follows, while active advancing border that is a few mm wide retains its original erythematous color and is slightly raised. +++++
- May occur throughout the body with exceptions of beard area in men (tinea barbae), groin (tinea cruris), feet (tinea pedis), or hand (tinea manuum).

Workup

- Because of the many diverse clinical presentations, KOH analysis is very helpful in confirming the diagnosis. Specimen best obtained from actively spreading border. ++++
- If vesicle or bulla sample, best obtained from roof of blister

Comments and Treatment Considerations

Usually responds very well with topical antifungals. Oral treatment may be necessary for patients who have failed topical treatment or when the infection is too extensive for topical treatment. Oral terbinafine, fluconazole, and itraconazole can be used. Avoid use of antifungal/steroid combination medications, which can make diagnosis of conditions difficult and are significantly more expensive than antifungal creams. Outbreaks occur in athletes, especially wrestlers (tinea corporis gladiatorum).



TINEA CRURIS

Symptoms

- Pruritus is the most common symptom, although painful if skin is macerated. ++++

Signs

- Begins as macular erythematous patch high on inner aspect of thighs opposite the scrotum, but *not* involving the scrotum. Then it spreads centrifugally with partial central clearing and slightly elevated erythematous border, which is sharply demarcated. In some cases it may extend onto perineum and perianal areas and onto the buttocks. ++++

Workup

- KOH examination of scales from active border confirmatory. Culture if needed. ++++

Comments and Treatment Considerations

Topical antifungals are usually effective. Resistant lesions can be treated with griseofulvin 250 mg three times a day for 14 days. Keeping the area dry with talcum or other desiccant powders and by wearing boxers instead of brief underwear are important in preventing recurrences. Risk factors for tinea cruris are obesity, warm climate, and concurrent tinea pedis.



TINEA PEDIS

Symptoms

- Pruritus or pain in feet, especially between toes ++++

Signs

- Most common presentation is chronic intertriginous type in which there is fissuring, scaling, and maceration in interdigital and subdigital areas. This type is slow to progress and most commonly seen in fourth digital interspace. ++++
- Other types of tinea pedis include: (1) chronic papulosquamous pattern, a moccasin-like scaling over the soles, (2) vesicular or vesiculobullous type, and (3) acute ulcerative variant, which acutely develops maceration, weeping, and ulceration on the soles of feet. ++

Workup

- Clinical diagnosis with confirmatory KOH analysis. Culture rarely needed. ++++

Comments and Treatment Considerations

Generally all topical antifungal creams are equally effective. Interdigital tinea pedis requires only about 1 week of treatment. More involved infections may require approximately 4 weeks of treatment. Effective approach is to have patient use until skin appears normal and continue treatment for a few more days. Chronic, more extensive disease may require oral treatment (griseofulvin, terbinafine, or itraconazole). Adjunctive treatments include drying measures such as foot powders, drying feet well after bathing, and avoiding occlusive footwear when possible.



TINEA VERSICOLOR

Symptoms

- Usually asymptomatic ++
- May have mild pruritus ++++

Signs

- Most commonly presents as scaly hypopigmented macules, but can be hyperpigmented and typically located on upper chest, upper back, and proximal extremities. Color of lesions vary (hence the name *tinea versicolor*) from almost white to reddish brown. +++++
- Individual lesions usually small, but often coalesce ++++

Workup

- Clinical diagnosis with KOH confirmation. Fungal culture/periodic acid–Schiff (PAS) staining if needed.++++

Comments and Treatment Considerations

Topical antifungal treatments effective for limited disease with 70% to 80% cure rates after 2 weeks of treatment. It is important to note that healing continues after active treatment stops and resumption of pigmentation can take many months. Oral treatment may be more convenient for patients with extensive disease and may be more effective in patients with recurrent infections. Most oral antifungals with the exception of griseofulvin or terbinafine may be used. Ketoconazole—400 mg single dose or 200 mg every day for 5 days—has a 90% cure rate at 4 weeks. Recurrences of *tinea versicolor* are very common and thus topical selenium sulfide solution applied to the body every 2 to 3 weeks can be helpful. The most common age group affected is late adolescent and early adulthood.

HENOCH-SCHÖNLEIN PURPURA

Henoch-Schönlein purpura (HSP) is the most common systemic vasculitis of childhood. It occurs between the ages of 3 to 15 years and has a incidence between 5 and 8 years of age. The annual incidence is 10 to 20 per 100,000. It has low incidence in summer months. It is more common in whites and Asians than in African Americans. Male to female ratio is 2:1. The etiology of HSP is unknown but it is thought be an IgA-mediated inflammatory vasculitis of small vessels. It can affect multiple organ systems including GI, renal, musculoskeletal, integumentary, and pulmonary.

Symptoms

- Rash—Asymptomatic +++++
- Arthralgia—Transient, oligoarticular (one to four joints). Usually localized to lower extremities ++++
- Abdominal pain, nausea, vomiting, diarrhea ++
- Low-grade fever, fatigue ++++
- Scrotal pain ++

Signs

- The clinical manifestations may develop acutely or over several days or weeks and vary in their order of presentation.

- Palpable purpura—The hallmark of the disease in 100% of patients
+++++
- Erythematous, macular, or urticarial wheals that then coalesce and progress to petechiae or palpable purpura. It usually occurs in crops, is symmetric, and lasts 3 to 10 days. Localized angioedema may occur in buttocks or eyelids, lips, scrotum, or dorsum of the hands and feet.
- The rash may recur intermittently for 3 to 4 months, in some cases up to 1 year from initial episode.
- Heme-positive stools ++
- Hepatosplenomegaly +++
- Lymphadenopathy ++++

Workup

- CBC to check platelet count
- Urinalysis and serum BUN/creatinine to evaluate degree of renal involvement and assess renal function +++
- LFTs, hepatitis serology and coagulation studies: hepatitis B has been reported with HSP
- Antistreptolysin O (ASO) titer to look for preceding streptococcal URI
- Antinuclear antibody (ANA), rheumatoid factor (RF), ESR, CRP to exclude SLE, RA, and check for inflammation
- Stool culture and guaiac to rule out infectious etiology and screen for occult bleeding with HSP
- Abdominal US and x-ray should be done in patients with significant abdominal pain to rule out intussusception or bowel wall perforation. Contrast enema studies cannot detect ileoileal intussusception typically seen in HSP and therefore are not helpful. +
- Chest x-ray to exclude pulmonary nodules or hilar adenopathy or lymphoma
- Skin biopsy to confirm diagnosis when in question
- Renal biopsy if proteinuria is in nephritic range
- Esophagogastroduodenoscopy: when severe GI symptoms or hematemesis present
- Colonoscopy: when severe rectal bleeding is present

Comments and Treatment Considerations

The outcome for children with HSP is excellent with 94% complete recovery. The majority of patients improve with adequate hydration, rest, and symptomatic relief of pain in the ambulatory care setting. Hospitalization is recommended for patients with symptoms.

Patients will require IV hydration and frequent monitoring of vital signs if they are unable to maintain adequate oral intake. Severe GI symptoms or bleeding will require serial abdominal examinations and may need parenteral nutrition or blood transfusions. Patients should also be monitored for possible bowel obstructions, peritonitis, or intussusception.

If the patient exhibits mental status changes, monitor for intracranial hemorrhage. For nephrotic syndrome or renal insufficiency, monitor for hypertension, check renal function, and treat accordingly. Severe joint symptoms require proper pain management.

Symptomatic treatment is required for abdominal and joint pain and includes:

- NSAIDs (such as naproxen 1000 to 1500 mg/day orally for 5-7 days), are effective in controlling joint pain and abdominal pain.
- Glucocorticosteroids—The use of steroids in HSP patients to treat abdominal pain is controversial. The role of steroids has not been evaluated in large, randomized, controlled studies. Also, glucocorticosteroids do not shorten the course of the disease or prevent recurrence. However, prednisone (1 to 2 mg/kg/day PO) may decrease inflammation and pain and may alter the course of renal involvement.

The risk of significant renal involvement is higher in adults than in children and morbidity is a result of the degree of renal disease. Recurrences appear in one third of patients and may occur up to 1 year after initial episode. Recurrences are milder, shorter, and occur more commonly in patients with nephritis, elevated ESR, or those who received glucocorticoids. Patients should be followed weekly for urinalysis and blood pressure measurements for the first 2 to 3 months after initial episode and then every 1 to 2 months for up to 1 year.

IMPETIGO

Impetigo is a common skin infection in children or in households with children. It presents equally among males and females.

Symptoms

- Fever
- Diarrhea
- General weakness
- Bullae

Signs

- “Honey-colored” crust
- Vesiculopustular lesions
- Pruritus
- Regional lymphadenopathy
- *Staphylococcus aureus*
 - Increasing incidence of MRSA in the community
- Group A streptococci
 - Decreasing incidence

Comments and Treatment Considerations

Treatment includes topical ointments (e.g., mupirocin 2%) applied to the affected area. It can also include systemic therapies including azithromycin, clarithromycin, erythromycin, or oral second-generation cephalosporins.

If patient is presenting with bullous impetigo, administer anti-methicillin-susceptible *S. aureus* agents (dicloxacillin, oxacillin, cephalexin, amoxicillin (clavulanic acid), azithromycin, clarithromycin) or anti-MRSA agents (trimethoprim/sulfamethoxazole, minocycline).

PITYRIASIS ROSEA

Symptoms

- Usually asymptomatic skin lesions ++++
- Itching—Absent, mild, or severe ++
- Preceded by a prodrome of headache, malaise, and pharyngitis in small number of cases ++

Signs

- Eruption commonly begins with a “herald” or “mother” patch, a single round or oval, pink or salmon-colored lesion on the chest, neck, or back, 2 to 5 cm in diameter. The lesion soon becomes scaly and begins to clear centrally. ++++
- A few days later oval lesions similar in appearance to a herald patch, but smaller; appear in crops on the trunk and proximal areas of the extremities +++++
- Characteristic pattern of lesions—The long axes of the lesions follow the lines of cleavage in a “Christmas tree” distribution. +++++

Workup

- Check for the “herald” patch, which can resemble tinea corporis—KOH examination of scales from the skin lesion for dermatophyte hyphae may distinguish this condition. ++++
- No lab abnormalities are found in PR. +
- The presence of “herald” patch, the characteristic exanthematous, maculopapular, red scaling eruptions and the absence of symptoms other than pruritus combine to make pityriasis rosea (PR) an easy diagnosis in most instances. ++++

Comments and Treatment Considerations

PR occurs in persons aged 10 to 35 years. Spontaneous remission occurs in 6 to 12 weeks or less. If the eruption persists for over 6 weeks a skin biopsy should be done to rule out parapsoriasis. The etiology is unknown but probably caused by an infectious agent. Relapse is unusual and infectivity is thought to be very low. In most cases of PR no treatment is necessary other than reassurance and proper patient education. The rash may persist for 2 to 3 months and new lesions may occur during this time but should disappear spontaneously.

Topical steroids can be applied two or three times daily to control itching. Topical antipruritic lotions such as Prax, Pramegel, or Sarna may also be helpful. Referral to a dermatologist for phototherapy (UVB) may be considered in patients with severe itching. A trial of erythromycin (250 mg orally four times a day for 14 days) may be useful in severe cases of PR. In one well-controlled study of 90 patients it was noted to reduce both the duration and severity of the disease. A nonrandomized single-blind trial suggested that high-dose acyclovir (800 mg orally five times daily for 7 days) may also be beneficial.

Psoriasis, secondary syphilis, tinea corporis, Lyme disease, HIV seroconversion illness, and drug eruptions must be considered in the differential diagnosis of PR.

STEVENS-JOHNSON SYNDROME AND TOXIC EPIDERMAL NECROLYSIS

Stevens-Johnson Syndrome (SJS) and toxic epidermal necrolysis (TEN) are severe hypersensitivity reactions, characterized by systemic symptoms, mucosal inflammation, and blistering and desquamation of large areas of skin.

- Drugs: Antibiotics; antiepileptics; antigout; analgesics; corticosteroids; and antiretrovirals are the most common inciting factors, with highest risk within 8 weeks of initiation.
- Viral and bacterial infections (*Mycoplasma pneumoniae*, herpes simplex, respiratory tract infection) may be more common in children.
- Risk factors: Human leukocyte antigen (HLA) B₁₂, immunosuppressed states as in HIV, SLE, and bone marrow transplant patients



CLASSIFICATIONS

- SJS—Epidermal detachment of less than 10% body surface area
- Overlap SJS-TEN—Epidermal detachment of 10% to 30% body surface area
- TEN—Epidermal detachment greater than 30% body surface area

Symptoms

- URI-like prodrome including:
 - Fever +++
 - Sore throat
 - Chills
 - Headache
 - Malaise
 - Cough
 - Painful mucocutaneous lesions ++++
 - Involving eyes (conjunctivitis)
 - GI (oral lesions, colitis)
 - Genitourinary (dysuria)
 - Skin: painful or burning eruption on face and thorax, spreading to body ++++

Signs

- Fever: greater than 38° C in TEN, not as high in SJS +++
- Blisters, tenderness of involved skin, primarily trunk, face ++++
- Nikolsky's sign: sloughing of superficial skin layer with minimal pressure ++++
- Painful mucosal ulcerations: purulent conjunctivitis, oral ulcers ++++
- Purpuric macules; flat atypical targets may be present, becoming confluent over trunk ++++

Workup

- There are no specific laboratory tests indicated. Skin biopsy may be done to confirm the diagnosis.

Comments and Treatment Considerations

Immediate discontinuation of any suspected inciting drug(s) improves survival. Supportive care and treatment in a burn unit or ICU improve mortality, which is about 5% for SJS and 30% to 50% for TEN. Prognosis depends on age, heart rate, presence of cancer, body surface area involved, BUN, serum bicarbonate, and blood glucose; ophthalmology consultation is necessary because blindness is a potential complication.

Small series have reported mixed benefits for various treatments:

- High-dose corticosteroids for SJS
- IVIg at a dose of 0.5 to 1 g/kg/day over 3 to 5 days for SJS and TEN
- Plasmapheresis (with or without IVIg) every other day or daily for TEN
- Cyclophosphamide at 150 to 300 mg/day orally (with or without prednisone) for TEN
- Cyclosporine at 150 mg IV twice a day for TEN
- N-acetylcysteine, ulinastatin, anti-TNF- α , and pentoxifylline have limited data; thalidomide increases mortality

Recovery takes 1 to 3 weeks or longer depending on reepithelialization.

Long-Term Sequelae

- Pain, scarring, strictures of mucosal membranes (e.g., esophageal strictures, phimosis, vaginal synechiae)
- Post-inflammatory hyperpigmentation, nail growth abnormalities
- Blindness, due to dry eyes and corneal scarring
- Decreased pulmonary diffusion capacity

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